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REMARKS

Claims 1 and 17 have been canceled, and claims 2-13, 15-16 and 18-25 have been amended. Entry of the above amendments is earnestly requested and deemed appropriate to the extent that the amendments do not present any new issues that would require further searching or substantive examination. More specifically, claim 19 has been rewritten in independent form, claims 2, 10, 11, 20, 21, 23 and 24 have been amended to conform claim dependency and/or claim terminology with independent claim 19, and independent claim 13 has been amended to have limitations conforming with the limitations of claim 19. Upon entry of the above amendments, claims 2-16 and 18-30 will remain pending and under consideration in the application.

Rejections Under 35 U.S.C. §112, First Paragraph

The Examiner has stated that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the invention was filed, had possession of the claimed invention. Specifically, the Examiner has objected to the expressions "a cross-linked material," "dendritic polymer blocks intermolecularly cross-linked by a linear moiety having alternating conjugated double and triple bonds" and "covalently bonded directly to the dendritic polymer blocks . . . a spacer moiety."

This rejection has been obviated by the above amendments in which the expressions cited by the Examiner have been deleted.

It is believed that claim 19, as amended above, encompasses the identical subject matter of previously pending claim 19, using terminology that is identically supported by the original disclosure, which in the examples (Examples 1 and 2) discloses a compound comprising dendritic polymer moieties intermolecularly linked by a moiety having alternating conjugated double and triple bonds, and at least one sensory group covalently bonded to the dendritic polymer moieties, the dendritic polymer moieties having at least two different types of reactive end groups. More specifically, Example 1 discloses preparation of a modified PAMAM dendrimer having diacetylene moieties (derived from N-succinimidyl-10,12-pentacosadiynoic acid) and sensory groups (derived from N-succinimidyl-biotin), and Example 2 discloses subsequent reaction of diacetylene moieties to achieve intermolecular linking of the modified

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dendrimers, whereby the claimed compound (a cross-linked or cured composition) is formed. As disclosed in the examples, the resulting compound in which the dendritic polymer moieties are intermolecularly linked by the diacetylene moieties having alternating conjugated double and triple bonds includes two different types of reactive end groups (hydroxyl end groups and amine end groups). Thus, Examples 1 and 2 describe the claimed compound.

Further, the claimed compound is disclosed in the Summary of the Invention (paragraph 9 of the application as filed, or paragraph 11 of the published application), which states that the invention encompasses "dendritic polymer network based colorimetric biosensors in which dendritic blocks are intermolecularly linked by alternating conjugated double and triple bonds," in the Description of the Preferred Embodiments (paragraph 15 from the original specification or paragraph 17 of the published application), which discloses that the novel macromolecular materials of the invention "comprise intermolecularly polymerized dendritic networks containing alternating conjugated double and triple bonds" and include "one or more chemical and/or biological sensory groups . . . covalently attached to the dendritic building blocks," and also in the Description of the Preferred Embodiments (at paragraph 41 of the original specification or paragraph 43 of the published application), which discloses that problems with poor solubility and excessive crystallinity are solved by utilizing dendrimers having "two or more different kinds of end-groups."

Amended claim 19 is also in complete conformance with original claim 19 directed to "A compound of claim 1 derived from a dendritic polymer which has a mixture of two or more types or reactive end-groups," in which claim 1 was directed to "A dendritic polymer network compound comprising at least one sensory group and interdendritic cross-linking segments of alternating conjugated double and triple bonds."

Rejection Under 35 U.S.C. §112, Second Paragraph

Claims 1-12 and 15-30 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. More specifically, the Examiner has objected to the expressions "cross-linked material", "dendritic polymer blocks" and "a linear moiety." The Examiner has also noted that the term "cross-linked material of claim 13" recited in

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claims 15-18 is inconsistent with claim 13, and that the "change in fluorescent properties of claim 30 is inconsistent with the "colorimetric change" of claim 25.

The terms "cross-linked material", "dendritic polymer blocks" and "a linear moiety" have been deleted from the claims. Claims 15-18 have been amended to delete the term "cross-linked," and claim 25 has been amended to delete the word "colorimetric." It is believed that the rejections under 35 U.S.C. §112, second paragraph, have been overcome by the above amendments.

Provisional Obviousness-Type Double Patenting Rejection

Claims 13-16 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting. As previously stated, Applicants will respond to an obviousness-type double patenting rejection in the event that claims of the copending United States Patent Application No. 10/068,378 are patented.

Prior Art Rejections

Claims 13-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over each of the following: (a) Lee et al. (Polymer Preprints 2002), Sui et al. (Colloids and Surfaces 2000) or Balouh et al. (Macromolecules 1999), in combination with each of the following (b) Ribi (U.S. Patent No. 5,622,872), Charych et al. (U.S. Patent No. 6,022,748) or Charych et al. (U.S. Patent No. 6,001,556).

This rejection has been overcome by amending the claims to require that the dendritic polymer moieties have "at least two different types of reactive end-groups." None of the prior art references teach or suggest the specific combination, nor the importance of utilizing a dendritic polymer having a combination of two or more different types of reactive end-groups.

As stated in the specification (paragraphs 39-41 of the original specification or paragraphs 41-43 of the published application), the use of dendritic polymers having at least two different types of reactive end-groups allow selective covalent attachment of diacetylene lipids to some or all end-groups of a first type (e.g., amine), while leaving less reactive end groups of a second type (e.g., hydroxyl) unaffected. These end-groups of the second type are useful for improving solubility of diacetylene functionalized dendrimers prior to intermolecular

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polymerization. In addition, the presence of unmodified reactive functional groups of a second type reduces crystallinity and facilitates deposition of coherent films on a variety of substrates. The references teach preparation of diacetylene-modified PAMAM dendrimers having only amine functional end-groups. While dendrimers having a plurality of different types of reactive end-groups and their utility in other applications were known, such as in the targeted delivery of therapeutic agents, the prior art does not suggest the use of dendrimers having a plurality of different reactive end-groups in the preparation of the claimed compounds that are useful for preparing biosensors. More specifically, the prior art does not teach or suggest the problems solved with the claimed invention or provide any other motivation for utilizing dendrimers having two or more different types of reactive end-groups. It is only by reference to Applicants' specification, not the prior art, that one having ordinary skill in the art would understand that the use of dendritic polymers having at least two different reactive end-groups provides improved solubility and decreased crystallinity, which facilitates deposition of coherent films on a variety of substrates.

Claims 1-12 and 17-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sui et al. in combination with Ribí, Charych et al. '748 or Charych et al. '556.

For the reasons generally set forth above, it is respectfully submitted that the claims distinguish over the prior art by requiring that the dendritic polymer moieties have "at least two different types of reactive end-groups." As stated above, the use of two different types of end-groups (e.g., amine and hydroxyl) facilitates attachment of diacetylene moieties to the amine terminals while leaving hydroxyl terminals that impart reduced crystallinity, improved solubility, and improved film deposition properties. These features and advances are neither taught nor suggested by the prior art.

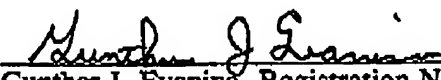
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CONCLUSION

In view of the above amendments and remarks, it is respectfully submitted that the application is in condition for allowance and notice of the same is earnestly solicited.

Respectfully submitted,

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Date



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